



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/912,720	07/24/2001	David A. Foti	04899-052001	5512

7590 09/23/2004

KEVIN J. CANNING ESQ.  
LAHIVE & COCKFIELD LLP  
28 STATE STREET  
BOSTON, MA 02109

EXAMINER

KANG, INSUN

ART UNIT PAPER NUMBER

2124

DATE MAILED: 09/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/912,720

Applicant(s)

FOTI, DAVID A.

Examiner

Insun Kang

Art Unit

2124

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 3/11/03, 9/9/02, 1/27/03, 2/13/02, 7/24/01.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-45 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 September 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 7/24/01-3/11/03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. This action is responding to application papers dated 3/11/2003, 9/9/2002, 1/27/2003, 2/13/2002, and 7/24/2001.
2. Claims 1-45 are pending in the application.

### ***Oath/Declaration***

3. The Oath/Declaration is missing. A properly signed oath or declaration in compliance with 37 CFR 1. 63, identifying the application by the Application Number and Filing Date, is required.

### ***Specification***

4. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

The abstract does not contain sufficient description of the technical disclosure of the invention. Appropriate correction is required.

### ***Claim Objections***

5. Claims 16-30 are objected to because of the following informalities:

Per claim 30, there appears to be a minor typographical error in 8. The word "controlling" needs to be corrected to "control."

Per claim 16, there appears to be a minor typographical error in line 1. The word "computer-readable-medium" needs to be corrected to "computer-readable medium" for consistency with the dependent claims.

As per claims 17-29, these claims are objected for dependency on the above objected parent claim 16.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 31-45 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claims recite transferring software/instructions from source computer-system to a target computer-system. The specification does not describe this limitation.

Art Unit: 2124

The specification recites, "simulating a dynamic system by creating block diagrams in which each block represents a transfer function of a constituent element of the dynamic system" in page 1 lines 20-24. However, this transfer function does not describe transferring software/instructions to another system. Therefore, claims 31-45 are not enabling.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

---

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

---

9. Claims 1-14, 16-29, and 31-44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "said object" in line 4. There is insufficient antecedent basis for this limitation in the claim. It is interpreted as "said candidate object."

Claim 16 recites the limitation "said object" in line 6. There is insufficient antecedent basis for this limitation in the claim. It is interpreted as "said candidate object."

Claim 31 recites the limitation "said object" in line 7. There is insufficient antecedent basis for this limitation in the claim. It is interpreted as "said candidate object."

As per claims 2-14, 17-29, and 32-44, these claims are rejected for dependency on the above rejected parent claims 1, 16, and 31.

***Claim Rejections - 35 USC § 101***

10. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

11. Claims 1-15 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 1-15 are non-statutory because they are directed to a "method" without recitation of a computer or a computer-readable medium embodying the method. The claims merely recite a "method" that is disembodied arrangement so as to be called a "computer program" or compilation of facts, information, or data *per se*, without creating any functional interrelationship, either as part of the stored data or as part of the computing processes performed by the computer ("acts") or computer readable medium so as to enable the computer to perform the claimed steps of determining a first value, controlling disposition, etc as recited.

Thus the claims represent non-functional descriptive material that is not capable of producing a useful result, and hence represent only abstract ideas. Therefore, the claims are non-statutory.

***Claim Rejections - 35 USC § 102***

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent

Art Unit: 2124

granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

13. Claims 1-45 are rejected under 35 U.S.C. 102(e) as being anticipated by

Houldsworth (US Patent 6,502,110).

Per claim 15:

Houldsworth discloses:

- detecting deletion of a reference to a candidate object ("reclaiming memory space allocated to data structures...by identifying pointers," abstract)
- determining a number of cyclic paths that include said candidate object ("a cycle of the first system may be interleaved between cycles of the second system; a first number of cycles of the first system are interleaved between a second number of cycles of the second system. A global indicator may dictate from which system the next memory reclamation cycle will be derived," col. 2 lines 52-61)
- determining a number of internal references to said candidate object ("The bits represent a reference count of references from each direction in the heap," col. 6 lines 23-40)
- controlling disposition of said object on the basis of a defined relationship between said number of internal references and said number of cyclic paths ("Whilst the in above description reference counting is performed during the reference-sweep cycle, the reference counting could alternatively, or in addition, be performed during

Art Unit: 2124

the mark-sweep cycle. This would mean in the above example that objects 540 and 530a are reclaimed one cycle earlier," col. 6 lines 41-47) as claimed.

Per claim 1:

Houldsworth discloses:

- determining a first value indicative of a number of references to said candidate object that are not references from other objects; and controlling disposition of said object on the basis of said first value ("a reference counting garbage collector is able to detect unused objects and immediately reclaim memory occupied by them," col. 1 lines 40-50) as claimed.

Per claim 2:

The rejection of claim 1 is incorporated, and further, Houldsworth teaches:

-determining a first value comprises reading an external-reference count ("The technique involves first marking all stored objects that are still reachable y other stored objects or from external locations by tracing a path or paths through the pointers linking data objects," col. 1 lines 27-35) as claimed.

Per claim 3:

The rejection of claim 1 is incorporated, and further, Houldsworth teaches:

-determining, on the basis of said first value, whether there exists at least one reference to said candidate object that is not from another object; and marking said



Art Unit: 2124

candidate object for preservation if there exists at least one reference to said candidate object that is not from another object (col. 2 lines 52-61) as claimed.

Per claim 4:

The rejection of claim 1 is incorporated, and further, Houldsworth teaches:

-determining a second value indicative of a number of references to said candidate object from other objects; and determining a third value indicative of a number of cyclic paths including said candidate object; and controlling disposition of said candidate object on the basis of said second value and said third value (col. 6 lines 41-47) as claimed.

Per claim 5:

The rejection of claim 4 is incorporated, and further, Houldsworth teaches:

- reading an internal-reference count (col. 1 lines 40-50) as claimed.

Per claim 6:

The rejection of claim 4 is incorporated, and further, Houldsworth teaches:

- identifying a referred object that lies on a path containing a reference originating at said candidate object; determining a fourth value indicative of a number of references to said referred object that originate at other objects, said fourth value being associated with said referred object; and determining a fifth value indicative of the number of cyclic paths to said candidate object that pass through said referred object, said fifth value

Art Unit: 2124

being associated with said referred object (col. 2 lines 52-61) as claimed.

Per claim 7:

The rejection of claim 6 is incorporated, and further, Houldsworth teaches:

-initializing a sixth value associated with said referred object, said sixth value being indicative of a number of cyclic paths known to include said candidate object and said referred object; and adjusting said sixth value if said referred object has a reference directly to said candidate object (col. 2 lines 52-61) as claimed.

Per claim 8:

The rejection of claim 7 is incorporated, and further, Houldsworth teaches:

- identifying a referring object having a reference to said referred object; and detecting a defined relationship between said fifth value and said sixth value associated with said referred object, adjusting a seventh value associated with said referring object in response to detection of said defined relationship, said seventh value being indicative of a number of known cyclic paths that include said candidate object and said referring object (col. 2 lines 45-67) as claimed.

Per claim 9:

The rejection of claim 8 is incorporated, and further, Houldsworth teaches:

Art Unit: 2124

- determining that said fifth value and said sixth value are equal to each other (col. 7 lines 16-25) as claimed.

Per claim 10:

The rejection of claim 8 is incorporated, and further, Houldsworth teaches:

- adjusting said seventh value by an amount corresponding to said sixth value (col. 7 lines 16-25) as claimed.
- 

Per claim 11:

The rejection of claim 4 is incorporated, and further, Houldsworth teaches:

- determining if said candidate object is externally unreachable or externally reachable; designating said candidate object for destruction if said candidate object is externally unreachable; and designating said candidate object for preservation if said candidate object is externally reachable (col. 1 lines 27-35; col. 3 lines 5-15) as claimed.

Per claim 12:

The rejection of claim 4 is incorporated, and further, Houldsworth teaches:

- determining a third value comprises: classifying a path to said candidate object as originating at an external reference or not originating at an external reference; and controlling disposition of said candidate object comprises designating said candidate object for destruction if no path to said candidate object originates at an external

Art Unit: 2124

reference (col. 1 lines 27-35; col. 3 lines 5-15) as claimed.

Per claim 13:

The rejection of claim 12 is incorporated, and further, Houldsworth teaches:

- for each object on said path, determining if said object has an external reference; and classifying said path on the basis of whether at least one object on said path has a reference selected from the group consisting of an external reference and an internal reference from an object not reachable from said candidate object (col. 1 lines 27-35; col. 3 lines 5-15) as claimed.

Per claim 14:

The rejection of claim 1 is incorporated, and further, Houldsworth teaches:

- determining whether said candidate object is referenced from outside of a tree; and marking said candidate object for preservation if there exists a reference to said candidate object from a tree (col. 40-61) as claimed.

Per claims 16-30, they are the computer-readable medium versions of claims 1-15, respectively, and are rejected for the same reasons set forth in connection with the rejection of claims 1-15 above.

Per claims 31-45, the claims are rejected under 35 U.S.C. 112, first paragraph as not being enabling as shown above. However, the limitations except transferring instructions to a target system are considered and examined. Therefore, accordingly,

Art Unit: 2124

they are another method versions of claims 1-15, respectively, and are rejected for the same reasons set forth in connection with the rejection of claims 1-15 above.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Insun Kang whose telephone number is 703-305-6465. The examiner can normally be reached on M-F 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on 703-305-9662. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

IK  
9/16/2004



ANIL KHATRI  
PRIMARY EXAMINER